

Abstract Submitted to
The 11th Topical Conference on High Temperature Plasma Diagnostics
Monterey, Ca. May 12-16, 1996

Imaging Back-Scattered and Near to Back-Scattered Light in Laser Produced Plasmas*----R. K. Kirkwood, C. A. Back, S. H. Glenzer, B. J. MacGowan, D. S. Montgomery, and J. D. Moody, *Lawrence Livermore National Laboratory, University of California, L-447 P.O. Box 808, Livermore Ca. 94550*, -- In order to model energy balance in ignition scale plasmas it is necessary to account for energy scattered at all angles from the incident laser beam. Many early experiments indicated most of the scattered energy was collected by the the final focusing lens of the incident beam (back-scatter) while little energy scattered at large angles (side scatter). Recently we developed a Near to Back-scatter Imaging (NBI) system at Nova to image the light scattered just outside the f/4.3 lens (between 8° and 20° from direct back scatter). The diagnostic consists of a diffusing reflector around the lens and two cameras that image long wavelength light from Raman scattering and short wave length light from Brillouin scattering, that strikes the plate. Combining these images with images taken of light scattered into the lens provides a nearly complete map of the energy scattered within the 20° cone. We observe between 5% and 50% of the backscatter in the 8° to 20° region, depending on target materials and geometry. Details of the diagnostic construction and calibration will be discussed and data will be presented and compared with theories for the angular distribution of back scatter.

*Work performed for the U.S. DoE by the Lawrence Livermore Nat. Lab under contract W-7405-ENG-48.

Prefer Poster Session

Robert K. Kirkwood
L-473
LLNL
P. O. Box 808
Livermore, Ca. 94550